Listing of Claims:

1. (currently amended) The method of fabricating a backside surface of a wafer of microwave radio frequency circuit die, said method comprising the steps of:

forming an array of via holes of selected location and depth dimension in said wafer of circuit die;

said via holes being located in response to selected microwave radio frequency electrical component locations over said front side surface of said wafer circuit die;

said step of forming an array of via holes being performed during a front side accessing of said wafer of circuit die;

disposing a grid pattern mask on said backside surface of said wafer of microwave radio frequency circuit die;

said grid pattern mask including a backside periphery outline masking for each circuit die of said wafer;

removing a layer of selected thickness from said wafer backside surface, said removing being from exposed backside surface areas intermediate elements of said grid pattern mask~~ing~~;

said removing step leaving recessed valley portions of selected thickness disposed intermediate individual circuit die-strengthening upstanding surrounding bluff masked semiconductor regions in said wafer backside surface and exposing backside portions of said formed front side via holes; and

interconnecting front side and back side ground plane microwave radio frequency energy conveying metal conductors of said wafer circuit die by way of metallic conductors traversing said via holes.

2. (previously presented) The method of fabricating a backside surface of a wafer of microwave radio frequency circuit die of claim 1 wherein said wafer has an initial overall thickness between five hundred and six hundred twenty five micrometers and has a final thickness of between twenty five and one hundred micrometers in said removed layer recessed valley portions.

3. (previously presented) The method of fabricating a backside surface of a wafer of microwave radio frequency circuit die of claim 1 wherein said step of forming an array of via holes is performed during one of before fabrication of said microwave radio frequency circuit on said die and after fabrication of said microwave radio frequency circuit on said die.

4. (currently amended) The method of fabricating a backside surface of a wafer of microwave radio frequency circuit die of claim 1 further including the step of forming an etching dimension [depth] vernier marker pattern in each die backside surface of said wafer after said step of forming an array of front side via holes.

5. (previously presented) The method of fabricating a backside surface of a wafer of microwave radio frequency circuit die of claim 1 wherein said backside periphery outline masking is disposed in a closed geometric pattern encircling each front side microwave radio frequency circuit die and further including a closed geometric pattern backside annular ring of original wafer thickness semiconductor material surrounding said entire wafer of microwave radio frequency circuit die.

6. (previously presented) The method of fabricating a backside surface of a wafer of microwave radio frequency circuit die of claim 1 wherein said step of removing a layer of selected thickness from said wafer backside surface includes a backside surface etching step.

7. (previously presented) The method of fabricating a backside surface of a wafer of microwave radio frequency circuit die of claim 6 wherein said backside surface etching step comprises a dry gas etching sequence.

8. (previously presented) The method of fabricating a backside surface of a wafer of microwave radio frequency circuit die of claim 7 wherein said backside surface etching step includes one of an inductively coupled plasma and an electron cyclotron resonance fast etching processes.

9. (previously presented) The method of fabricating a backside surface of a wafer of microwave radio frequency circuit die of claim 1 wherein said removing step individual circuit die-strengthening upstanding surrounding bluff masked regions further include a wafer periphery-surrounding annular ring upstanding bluff region.

10. (cancelled)
11. (cancelled)
12. (cancelled)
13. (cancelled)
14. (cancelled)
15. (cancelled)
16. (cancelled)
17. (cancelled)
18. (cancelled)
19. (cancelled)
20. (cancelled)
21. (cancelled)

22. (currently amended) The method of making a thinned semiconductor wafer radio frequency integrated circuit device of damage resistant physical integrity, desirable high frequency electrical characteristics and favorable thermal energy dissipating characteristics, said method comprising the steps of:

fabricating electrical circuit portions of said thinned semiconductor wafer radio frequency integrated circuit device on a frontal side of a nominal thickness semiconductor wafer, each said integrated circuit device being disposed in a separate die location of said semiconductor wafer and including a plurality of contact pads;

forming a plurality of via hole intrusions <u>through</u> ~~into~~ said nominal thickness semiconductor wafer in locations registered with selected of said contact pads of said integrated circuit device;

said via hole intrusions being formed from said frontal side of said nominal thickness semiconductor wafer;

metallizing said via hole <u>intrusions</u> ~~openings~~, said metallizing including establishing via metal electrical connections with selected of said contact pads;

depositing a mask of grid pattern-defining configuration on said wafer backside surface;

said mask of grid pattern-defining configuration determining a plurality of wafer backside grid cells each aligned in surrounding periphery with one of said wafer frontal surface integrated circuit devices;

removing a controlled thickness amount of semiconductor wafer backside surface semiconductor material within each said backside grid cell, said removing including an etching step and leaving a wafer backside grid pattern of semiconductor material of said semiconductor wafer nominal thickness dimension and leaving a selected thickness remainder amount of said semiconductor wafer nominal thickness dimension material, within each said backside grid cell, supporting each said integrated circuit device;

said removing step also exposing wafer thickness-received portions of said front side via hole intrusions metallization;

said etching step also leaving a wafer perimeter-disposed backside ring of wafer semiconductor material of said semiconductor wafer nominal thickness dimension and integral interconnection with said wafer backside grid pattern of wafer nominal thickness dimension;

said wafer perimeter-disposed backside ring of wafer semiconductor material of said semiconductor wafer nominal thickness dimension and said wafer backside grid pattern of wafer nominal thickness dimension semiconductor material in interconnecting combination adding physical handling-assisting substantial physical integrity and rigidity to said now thinned semiconductor wafer;

covering said thinned semiconductor wafer backside including said wafer backside grid pattern cells with a layer of ground plane metal, said covering including forming metal-to-metal ground plane electrical interconnections with said via hole intrusions metallization;

mounting said wafer on said frontal surface thereof; and

further processing said wafer during continued frontal surface mounting, said further processing including removing each integrated circuit device die from said wafer by wafer segregation within a lateral extent of a backside grid cell.

23. (original) The method of making a thinned wafer radio frequency integrated circuit device of claim 22 wherein said step of forming a plurality of via hole intrusions into said semiconductor wafer includes:

disposing said via hole intrusions to a first depth dimension into said semiconductor wafer; and

wherein said selected thickness remainder amount of said semiconductor wafer nominal thickness dimension material in said step of removing a controlled thickness amount of said wafer backside semiconductor material within each said backside grid cell comprises leaving a selected thickness remainder amount of said wafer nominal thickness equal to said via hole intrusions first depth dimension into said semiconductor wafer.

24. (original) The method of making a thinned wafer radio frequency integrated circuit device of claim 23 wherein:

said semiconductor wafer of nominal thickness is between five hundred and six hundred twenty-five micrometers in thickness; and

wherein said selected thickness remainder amount of said wafer nominal thickness and said via hole intrusions first depth dimension are each no more than one hundred micrometers.

25. (original) The method of making a thinned wafer radio frequency integrated circuit device of claim 22 wherein said radio frequency integrated circuit device is comprised of one of field effect and bipolar junction and heterojunction bipolar transistors.

26. (cancelled)

27. (original) The method of making a thinned wafer radio frequency integrated circuit device of claim 22 wherein said depositing step mask is a metallic mask.

28. (original) The method of making a thinned wafer radio frequency integrated circuit device of claim 22 wherein said removing step etching comprises an anisotropic etching, dry gas, reactive ion, plasma etching sequence.

29. (original) The method of making a thinned wafer radio frequency integrated circuit device of claim 28 wherein said anisotropic etching, dry gas, reactive ion, plasma etching sequence comprises one of an inductively coupled plasma (ICP) and an electron cyclotron resonance (ECR) high density plasma etching sequences.

30. (original) The method of making a thinned wafer radio frequency integrated circuit device of claim 22 wherein said covering step forming of ground plane electrical interconnections comprises covering underside portions of etching-exposed second smaller diameter via hole metallizations with ground plane metal.

31. (currently amended) The method of fabricating a thinned microwave radio frequency semiconductor wafer of significantly retained original wafer physical strength properties, said method comprising the steps of:

defining an array of circuit die locations and circuit die segregation boundaries across a frontal surface of said semiconductor wafer;

forming a circuit die having a plurality of electrical components and front side-received via hole throughways in each frontal surface circuit die location of said semiconductor wafer;

disposing a mask inclusive of mask elements in registration with said circuit die segregation boundaries across a backside surface of said semiconductor wafer; and

removing wafer-thinning backside selected thickness portions of said wafer from regions intermediate said mask elements and thereby unprotected by said mask;

said removing step leaving a physical strength preserving upstanding integrally interconnected mesa array of original wafer thickness extent in registration with said circuit die segregation boundaries across said semiconductor wafer backside surface and exposing wafer thickness-received portions of said front side-received via hole throughways and;

covering said thinned wafer backside with ground plane metal, metal extending through said via hole throughways to said frontal surface of said semiconductor wafer.

32. (currently amended) The method of fabricating a thinned microwave radio frequency semiconductor wafer of significantly retained original wafer physical strength properties of claim 31 wherein said array of circuit die locations and circuit die segregation boundaries defined across a frontal surface of said semiconductor wafer and said upstanding mesa array of original wafer thickness extent across said backside surface each comprise a rectangular grid pattern.

33. (currently amended) The method of fabricating a thinned microwave radio frequency semiconductor wafer of significantly retained original wafer physical strength properties of claim 31 wherein said step of forming a circuit die having a plurality of electrical components and front side-received via hole throughways in each frontal surface circuit die location of said semiconductor wafer comprises fabrication of radio

frequency circuit die having via ~~apertures~~ aperture-measuring graduated dimension metallic patterns disposed within said via hole throughways in ~~extending through~~ thinned portions of said wafer.

34. (currently amended) The method of fabricating a thinned microwave radio frequency semiconductor wafer of significantly retained original wafer physical strength properties of claim 33 wherein said mask of said step of disposing a mask inclusive of mask elements in registration with said circuit die segregation boundaries across a backside surface of said semiconductor wafer further includes a mask element peripherally surrounding said wafer.

35. (currently amended) The method of fabricating a thinned microwave radio frequency semiconductor wafer of significantly retained original wafer physical strength properties of claim 31 wherein said step of removing wafer-thinning backside selected thickness portions of said wafer includes one of an inductively coupled plasma (ICP) and an electron cyclotron resonance (ECR) high density plasma etching sequences.

36. (currently amended) The method of fabricating a thinned microwave radio frequency semiconductor wafer of significantly retained original wafer physical strength properties of claim 31 wherein said method further includes segregating said circuit die into individual integrated circuits each exclusive of any portion of said wafer backside integrally interconnected upstanding mesa array of original wafer thickness extent.

37. (currently amended) The method of fabricating a thinned microwave radio frequency semiconductor wafer of significantly retained original wafer physical strength properties of claim 31 wherein said semiconductor wafer is comprised of one of silicon and gallium arsenide semiconductor materials.